1636
Box Seq

Practiti ner's Docket No. ___NEB-181_____   *PATENT*

#13/C
3eta
7-9-02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Vaisvila, et al.

Application No.: 0 9 / 689,343   Group No.: · 1636
Filed: October 12, 2000   Examiner: D. Guzo
For: Method For Cloning And Producing The MseI Restriction Endonuclease

Box Sequence
Assistant Commissioner for Patents
Washington, D.C. 20231

SUBMISSION OF "SEQUENCE LISTING," COMPUTER READABLE COPY, AND/OR AMENDMENT PERTAINING THERETO FOR BIOTECHNOLOGY INVENTION CONTAINING NUCLEOTIDE AND/OR AMINO ACID SEQUENCE

(check and complete this item, if applicable)

1.   ☒   This replies to the Office Letter dated __June 19, 2002_____.

NOTE: If these papers are filed before the office letter issues, adequate identification of the original papers should be made, e.g., in addition to the name of the inventor and title of invention, the filing date based on the "Express Mail" procedure, the application number from the return post card or the attorney's docket number added.

☒   A copy of the Office Letter is enclosed.

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10*
*(When using Express Mail, the Express Mail label number is **mandatory**;*
Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

MAILING

☒   deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

37 C.F.R. § 1.8(a)   **37 C.F.R. § 1.10***

☒   with sufficient postage as first class mail.   ☐   as "Express Mail Post Office to Addressee"
                                                     Mailing Label No. _____ **(mandatory)**

TRANSMISSION

☐   transmitted by facsimile to the Patent and Trademark Office.

Signature _~Melissa A. Jackson~_

Date: __6/28/02__

Melissa A. Jackson

(type or print name of person certifying)

***WARNING:** Each paper or fee filed by Express Mail **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).*
*"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.*

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 1 of 6)

BEST AVAILABLE COPY

IDENTIFICATION OF PERSON MAKING STATEMENT

2. I, <u>Harriet M. Strimpel</u>

(type or print name of declarant signing below)

state the following:

ITEMS BEING SUBMITTED

3. Submitted herewith is/are:

(check each item as applicable)

A. ☒ "Sequence Listing(s)" for the nucleotide and/or amino acid sequence(s) in this application. Each "Sequence Listing" is assigned a separate identifier as required in 37 C.F.R. § 1.821(c) and 37 C.F.R. §§ 1.822 and 1.823.

B. ☐ An amendment to the description and/or claims, wherein reference is made to the sequence by use of the assigned identifier, as required in 37 C.F.R. § 1.821(d).

C. ☒ A copy of each "Sequence Listing" submitted for this application in computer readable form, in accordance with the requirements of 37 C.F.R. §§ 1.821(e) and 1.824.

D. ☐ Please transfer to this application, in accordance with 37 C.F.R. § 1.821(e), the computer readable copy(ies) from applicant's other application identified as follows:

In re application of:

Application No.: 0 / Group No.:
Filed: Examiner:
For:

The Computer readable form(s) of applicant's other application corresponds to the "Sequence Indentifier(s)" of the application as follows:

Computer Readable Form

(other application)

"Sequence Identifier"

(this application)

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 2 of 6)

NOTE: "If the computer readable form of a new application is to be identical with the computer readable form
of another application of the applicant on file in the Office, reference may be made to the other application
and computer readable form in lieu of filing a duplicate computer readable form in the new application.
The new application shall be accompanied by a letter making such reference to the other application
and computer readable form, both of which shall be completely identified." 37 C.F.R. § 1.821(e).

E.   ☒   A statement that the content of each "Sequence Listing" submitted and
each computer readable copy are the same, as required in 37 C.F.R.
§ 1.821(g).

☐   Because the statement is not made by a person registered to
practice before the Office, the statement is verified as required in
37 C.F.R. § 1.821(b).

F.   ☒   Because this submission is made in fulfilling the requirement under 37
C.F.R. § 1.821(g), a statement that the submission includes no new matter.

☐   Because the statement is not made by a person registered to
practice before the Office, the statement is verified, as required in
37 C.F.R. § 1.821(g).

STATEMENT THAT "SEQUENCE LISTING" AND COMPUTER READABLE COPY ARE THE SAME AND/OR THAT PAPERS SUBMITTED INCLUDES NO NEW MATTER

4.   I hereby state:

(complete applicable item A and/or B)

A.   ☒   Each computer readable form submitted in this application, including
those forms requested to be transferred from applicant's other applica-
tion, is the same as the "Sequence Listing" to which it is indicated to
relate.

B.   ☒   All papers accompanying this submission, or for which a request for
transfer from applicants' other application, introduce no new matter.

STATUS

5.   Applicant is

☒   a small entity. A statement:

☐   is attached.

☒   was already filed.

☐   other than a small entity.

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 3 of 6)

6.

NOTE: *37 C.F.R. § 1.704(b) ". . .an applicant shall be deemed to have failed to engage in reasonable efforts to conclude processing or examination of an application for the cumulative total of any periods of time in excess of three months that are taken to reply to any notice or action by the Office making any rejection, objection, argument, or other request, measuring such three-month period from the date the notice or action was mailed or given to the applicant, in which case the period of adjustment set forth in § 1.703 shall be reduced by the number of days, if any, beginning on the day after the date that is three months after the date of mailing or transmission of the Office communication notifying the applicant of the rejection, objection, argument, or other request and ending on the date the reply was filed. The period, or shortened statutory period, for reply that is set in the Office action or notice has no effect on the three-month period set forth in this paragraph."*

NOTE: *"Extension of Time in Patent Cases (Supplement Amendments)—If a timely and complete response has been filed after a Non-Final Office Action, an extension of time is not required to permit filing and/or entry of an additional amendment after expiration of the shortened statutory period.*

If a timely response has been filed after a Final Office Action, an extension of time is required to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run." Notice of Dec. 10, 1985 (1061 O.G. 34-35).

NOTE: *See 37 C.F.R. § 1.645 for extensions of time in interference proceedings and 37 C.F.R. § 1.550(c) for extensions of time in reexamination proceedings.*

7. The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

(complete (a) or (b) as applicable)

(a) ☐ Applicant petitions for an extension of time under 37 C.F.R. § 1.136 (fees: 37 C.F.R. § 1.17(a)(1)-(4)) for the total number of months checked below:

Extension (months)	Fee for other than small entity	Fee for small entity
☐ one month	$ 110.00	$ 55.00
☐ two months	$ 400.00	$ 200.00
☐ three months	$ 920.00	$ 460.00
☐ four months	$ 1,440.00	$ 720.00

Fee: $_____

If an additional extension of time is required, please consider this a petition therefor.

(check and complete the next item, if applicable)

☐ An extension for _____ months has already been secured. The fee paid therefor of $_____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request $_____

OR

(b) ☒ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 4 of 6)

FEE PAYMENT

8. ☐ Attached is a ☐ check ☐ money order in the amount of $ _____

☐ Authorization is hereby made to charge the amount of $ _____

☐ to Deposit Account No. _____

☐ to Credit card as shown on the attached credit card information authorization form PTO-2038.

WARNING: Credit card information should **not** be included on this form as it may become public.

☐ Charge any additional fees required by this paper or credit any overpayment in the manner authorized above.

A duplicate of this paper is attached.

FEE DEFICIENCY

9.

NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, 1065 O.G. 31-33.

10. ☒ If any additional extension and/or fee is required, charge

☒ Deposit Account No. _14-0740_

☐ Credit card as shown on the attached credit card information authorization form PTO-2038.

WARNING: Credit card information should **not** be included on this form as it may become public.

SIGNATURE(s)

Harriet M. Strimpel

(type or print name of person signing statement)

June 25, 2002
Date

[signature]
Signature

32 Tozer Road
P.O. Address of Signatory
Beverly, MA 01915

(if applicable)
Telephone No. (978) 927-5054 X:373
Reg. No. 37008
Customer No.: 28986

☐ Inventor(s)
☐ Assignee of complete interest
☐ Person authorized to sign on behalf of assignee
☒ Practitioner of record
☐ Filed under Rule 34(a)
☐ Registration No. _____
☐ Other _____
(specify identity of declarant)

New England Biolabs, Inc.
_____

(typ name of assignee)
32 Tozer Road
_____

Address of assignee

Beverly, MA 01915
_____

Secretary
_____

Title of person authorized to sign on behalf of
assignee

A "STATEMENT UNDER 37 C.F.R. § 3.73(b)" is attached.
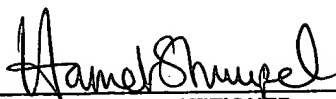
Assignment recorded in PTO on ___10/12/00 Filed with___ Application

Reel _____ Frame _____ not yet received

Reg. No.:   37008

Tel. No.: (978) 927-5054 X:373

Customer No.:   28986

_____
SIGNATURE OF PRACTITIONER
Harriet M. Strimpel, D. Phil.
Patent Counsel
_____
(type or print name of practitioner)
New England Biolabs, Inc.
32 Tozer Road
_____
P.O. Address

Beverly, MA 01915
_____

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/689,343	10/12/2000	Romualdas Vaisvila	NEB-181	7976

28986   7590   06/19/2002

NEW ENGLAND BIOLABS, INC.
32 TOZER ROAD
BEVERLY, MA 01915

EXAMINER
GUZO, DAVID

ART UNIT	PAPER NUMBER
1636	12

DATE MAILED: 06/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

OIPE

JUL 0.2 2002

PATENT & TRADEMARK OFFICE

Attachment

The reply filed 5/17/02 is not fully responsive to the Office communication mailed 5/3/02 for the reason(s) set forth below or on the attached Notice To Comply With The Sequence Rules or Raw Sequence Listing Error Report.

Since the above-mentioned reply appears to be *bona fide*, applicant is given a TIME PERIOD of ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this notice, whichever is longer, within which to supply the omission or correction in order to avoid abandonment. EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Guzo whose telephone number is (703) 308-1906. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Irem Yucel, can be reached on (703) 305-1998. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242. Faxes may be sent directly to the examiner at (703) 746-5061.

Any inquiry of a general nature or relating to the status of this application or proceeding or relating to attachments to this Office Action should be directed to Patent Analyst Zeta Adams whose telephone number is (703) 305-3291.

David Guzo
June 17, 2002

DAVID GUZO
PRIMARY EXAMINER

NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 CFR 1.821 - 1.825 for the following reason(s):

[✓] 1. This application clearly fails to comply with the requirements of 37 CFR 1.821 - 1.825. Applicant's attention is directed to these regulations, published at 1114 OG 29, May 15, 1990 and at 55 FR 18230, May 1, 1990.

[ ] 2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 CFR 1.821(c).

[ ] 3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 CFR 1.821(e).

[✓] 4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 CFR 1.822 and/or 1.823, as indicated on the attached copy of the marked-up "Raw Sequence Listing."

[ ] 5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A substitute computer readable form must be submitted as required by 37 CFR 1.825(d).

[ ] 6. The paper copy of the "Sequence Listing" is not the same as the computer readable form of the "Sequence Listing" as required by 37 CFR 1.821(e).

[ ] 7.

Other: ——————————————————————————————

Applicant must provide:

[✓] An initial or substitute computer readable form (CRF) copy of the "Sequence Listing"

[✓] An initial or substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification

[✓] A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 CFR 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d)

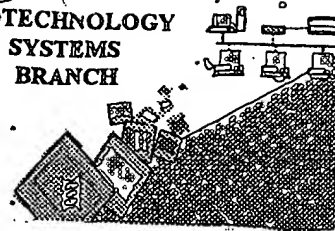For questions regarding compliance with these requirements, please contact:

For Rules Interpretation, call (703) 308-1123
For CRF submission help, call (703) 308-4212
For PatentIn software help, call (703) 557-0400

Applicants' Copy

RAW SEQUENCE LISTING
ERROR REPORT

#10

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/689,343 C3

Source: 1636

Date Processed by STIC: 5-30-02

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.
PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:
1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY
FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.
PATENTIN 2.1 e-mail help: patin21help@uspto.gov or phone 703-306-4119 (R. Wax)
PATENTIN 3.0 e-mail help: patin3help@uspto.gov or phone 703-306-4119 (R. Wax)

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 3.1 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:
http://www.uspto.gov/web/offices/pac/checker

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail. Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom. Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<http://www.uspto.gov/ebc/efs/downloads/documents.htm> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: U.S. Patent and Trademark Office, Box Sequence, P.O. Box 2327, Arlington, VA 22202
3. Hand Carry directly to:
   U.S. Patent and Trademark Office, Technology Center 1600, Reception Area, 7th Floor, Examiner Name, Sequence Information, Crystal Mall One, 1911 South Clark Street, Arlington, VA 22202
   Or
   U.S. Patent and Trademark Office, Box Sequence, Customer Window, Lobby, Room 1B03, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202
4. Federal Express, United Parcel Service, or other delivery service to: U.S. Patent and Trademark Office, Box Sequence, Room 1B03-Mailroom, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202

Revised 01/29/2002

JUL 0 2 2002

Raw Sequence Listing Error Summary

ERROR DETECTED | **SUGGESTED CORRECTION** | **SERIAL NUMBER:** 09/689,343B

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

1 ___ Wrapped Nucleics / Wrapped Aminos — The number/text at the end of each line "wrapped" down to the next line. This may occur if your file was retrieved in a word processor after creating it. Please adjust your right margin to .3; this will prevent "wrapping."

2 ___ Invalid Line Length — The rules require that a line not exceed 72 characters in length. This includes white spaces.

3 ___ Misaligned Amino Numbering — The numbering under each 5th amino acid is misaligned. Do not use tab codes between numbers; use space characters, instead.

4 ___ Non-ASCII — The submitted file was not saved in ASCII(DOS) text, as required by the Sequence Rules. Please ensure your subsequent submission is saved in ASCII text.

5 ___ Variable Length — Sequence(s) ___ contain n's or Xaa's representing more than one residue. Per Sequence Rules, each n or Xaa can only represent a single residue. Please present the maximum number of each residue having variable length and indicate in the <220>-<223> section that some may be missing.

6 ___ PatentIn 2.0 "bug" — A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequences(s) ___. Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies to the mandatory <220>-<223> sections for Artificial or Unknown sequences.

7 ___ Skipped Sequences (OLD RULES) — Sequence(s) ___ missing. If intentional, please insert the following lines for each skipped sequence:
(2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)
(i)   SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading)
(xi) SEQUENCE DESCRIPTION:SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)
This sequence is intentionally skipped

Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to include the skipped sequences.

8 ___ Skipped Sequences (NEW RULES) — Sequence(s) ___ missing. If intentional, please insert the following lines for each skipped sequence.
<210> sequence id number
<400> sequence id number
000

9 ___ Use of n's or Xaa's (NEW RULES) — Use of n's and/or Xaa's have been detected in the Sequence Listing. Per 1.823 of Sequence Rules, use of <220>-<223> is MANDATORY if n's or Xaa's are present. In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.

10 ___ Invalid <213> Response — Per 1.823 of Sequence Rules, the only valid <213> responses are: Unknown, Artificial Sequence, or scientific name (Genus/species). <220>-<223> section is required when <213> response is Unknown or is Artificial Sequence

11 ___ Use of <220> — Sequence(s) ___ missing the <220> "Feature" and associated numeric identifiers and responses. Use of <220> to <223> is MANDATORY if <213> "Organism" response is "Artificial Sequence" or "Unknown." Please explain source of genetic material in <220> to <223> section. (See "Federal Register," 06/01/1998, Vol. 63, No. 104, pp. 29631-32)   (Sec. 1.823 of Sequence Rules)

12 ___ PatentIn 2.0 "bug" — Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.

RECEIVED
JUN 0 7 2002
TECH CENTER 1600/2900

OIPE
JUL 0 2 2002
PATENT & TRADEMARK OFFICE

1636

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/689,343B

DATE: 05/30/2002
TIME: 10:22:31

Input Set : A:\NEB-181.ST25.txt
Output Set: N:\CRF3\05302002\I689343B.raw

```
 2 <110> APPLICANT: Vaisvila, Romualdus
 3         Morgan, Richard D.
 4         Kucera, Rebecca B.
 5         Claus, Toby B.
 6         Raleigh, Elisabeth A.
 8 <120> TITLE OF INVENTION: Method For Cloning And Producing The MseI Restriction
Endonuclease
10 <130> FILE REFERENCE: NEB-181
12 <140> CURRENT APPLICATION NUMBER: US 09/689,343B
13 <141> CURRENT FILING DATE: 2000-10-12
15 <160> NUMBER OF SEQ ID NOS: 9
17 <170> SOFTWARE: PatentIn version 3.1
19 <210> SEQ ID NO: 1
20 <211> LENGTH: 903
21 <212> TYPE: DNA
22 <213> ORGANISM: Micrococcus sp.
24 <220> FEATURE:
25 <221> NAME/KEY: CDS
26 <222> LOCATION: (1)..(900)
27 <223> OTHER INFORMATION:
29 <400> SEQUENCE: 1
30 atg cct atc tcg acc gtc tgg acg ccg gac gga gac gac ctc atc gtg          48
31 Met Pro Ile Ser Thr Val Trp Thr Pro Asp Gly Asp Asp Leu Ile Val
32 1               5                   10                  15
34 gag gcg gac aac ctc gat ttc att caa acg ctc ccc gac gcg agc ttc          96
35 Glu Ala Asp Asn Leu Asp Phe Ile Gln Thr Leu Pro Asp Ala Ser Phe
36                 20                  25                  30
38 cga atg atc tac atc gat ccg ccg ttc aac aca ggg cga acg cag cgg         144
39 Arg Met Ile Tyr Ile Asp Pro Pro Phe Asn Thr Gly Arg Thr Gln Arg
40             35                  40                  45
42 ctt cag tcg ctc aag acg acc cgc tcg gtc aca ggg tcg cga gtc ggc         192
43 Leu Gln Ser Leu Lys Thr Thr Arg Ser Val Thr Gly Ser Arg Val Gly
44         50                  55                  60
46 ttc aaa ggc cag acg tac gac acg gtc aag agc act ctg cac tcg tat         240
47 Phe Lys Gly Gln Thr Tyr Asp Thr Val Lys Ser Thr Leu His Ser Tyr
48 65                  70                  75                  80
50 gac gac gct ttc acc gac tat tgg tcg ttc ctc gaa ccg cgt ctc ctg         288
51 Asp Asp Ala Phe Thr Asp Tyr Trp Ser Phe Leu Glu Pro Arg Leu Leu
52                     85                  90                  95
54 gag gct tgg cgg ttg ctc acc cct gac ggc gcg ctc tat ctt cat ctg         336
55 Glu Ala Trp Arg Leu Leu Thr Pro Asp Gly Ala Leu Tyr Leu His Leu
56                     100                 105                 110
58 gat tac cgc gag gtt cac tac gcc aag gtc gtc ctc gac gcg atg ttc         384
59 Asp Tyr Arg Glu Val His Tyr Ala Lys Val Val Leu Asp Ala Met Phe
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file:/ C:\Crf3\Outhold\VsrI689343B.htm

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/689,343B
DATE: 05/30/2002
TIME: 10:22:31

Input Set : A:\NEB-181.ST25.txt
Output Set: N:\CRF3\05302002\I689343B.raw

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60           115                    120                     125
62 gga cgc gaa agc ttc ctg aac gag ctg atc tgg gcg tac gac tac ggc     432
63 Gly Arg Glu Ser Phe Leu Asn Glu Leu Ile Trp Ala Tyr Asp Tyr Gly
64     130                 135                   140
66 gcg cgc tcg aag agc aag tgg ccc acc aag cac gac aac atc ctc gtg     480
67 Ala Arg Ser Lys Ser Lys Trp Pro Thr Lys His Asp Asn Ile Leu Val
68 145                 150                   155                   160
70 tat gtg aag gac ccg aac aac tac gtc tgg aac ggt cag gat gta gat     528
71 Tyr Val Lys Asp Pro Asn Asn Tyr Val Trp Asn Gly Gln Asp Val Asp
72                 165                   170                   175
74 cgc gag ccc tac atg gcg ccc ggg ctc gtt aca ccc gag aag gta gcg     576
75 Arg Glu Pro Tyr Met Ala Pro Gly Leu Val Thr Pro Glu Lys Val Ala
76             180                   185                   190
78 ctt ggc aag ctg ccc acc gac gtc tgg tgg cac aca atc gtt ccg cct     624
79 Leu Gly Lys Leu Pro Thr Asp Val Trp Trp His Thr Ile Val Pro Pro
80             195                   200                   205
82 gcg agc aaa gag cgc acc ggg tac gcg aca cag aag ccg gtc ggc atc     672
83 Ala Ser Lys Glu Arg Thr Gly Tyr Ala Thr Gln Lys Pro Val Gly Ile
84     210                 215                   220
86 atc cgt cgc atg att cag gcg agc agc aat gaa ggc gac tgg gtt ctg     720
87 Ile Arg Arg Met Ile Gln Ala Ser Ser Asn Glu Gly Asp Trp Val Leu
88 225                 230                   235                   240
90 gat ttc ttc gct ggt agt ggg acg acc ggc gcc gcg gcc cgc cag ctc     768
91 Asp Phe Phe Ala Gly Ser Gly Thr Thr Gly Ala Ala Ala Arg Gln Leu
92             245                   250                   255
94 gga cgc cgt ttt gtg ctc gta gac gtc aac cca gaa gca atc gcg gta     816
95 Gly Arg Arg Phe Val Leu Val Asp Val Asn Pro Glu Ala Ile Ala Val
96             260                   265                   270
98 atg gca aaa cgg ttg gat gac ggg gca ttg gac acc agc gtg acg atc     864
99 Met Ala Lys Arg Leu Asp Asp Gly Ala Leu Asp Thr Ser Val Thr Ile
100         275                   280                   285
102 gtg cag act ccc cag agt gac cca cga acc gac gga tga                903
103 Val Gln Thr Pro Gln Ser Asp Pro Arg Thr Asp Gly
104     290                   295                   300
107 <210> SEQ ID NO: 2
108 <211> LENGTH: 300
109 <212> TYPE: PRT
110 <213> ORGANISM: Micrococcus sp.
112 <400> SEQUENCE: 2
114 Met Pro Ile Ser Thr Val Trp Thr Pro Asp Gly Asp Asp Leu Ile Val
115 1                 5                    10                   15
118 Glu Ala Asp Asn Leu Asp Phe Ile Gln Thr Leu Pro Asp Ala Ser Phe
119             20                   25                    30
122 Arg Met Ile Tyr Ile Asp Pro Pro Phe Asn Thr Gly Arg Thr Gln Arg
123         35                   40                    45
126 Leu Gln Ser Leu Lys Thr Thr Arg Ser Val Thr Gly Ser Arg Val Gly
127     50                   55                    60
130 Phe Lys Gly Gln Thr Tyr Asp Thr Val Lys Ser Thr Leu His Ser Tyr
131 65                   70                    75                   80
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/689,343B

DATE: 05/30/2002
TIME: 10:22:32

Input Set : A:\NEB-181.ST25.txt
Output Set: N:\CRF3\05302002\I689343B.raw

```
134 Asp Asp Ala Phe Thr Asp Tyr Trp Ser Phe Leu Glu Pro Arg Leu Leu
135                 85                  90                  95
138 Glu Ala Trp Arg Leu Leu Thr Pro Asp Gly Ala Leu Tyr Leu His Leu
139             100             105                 110
142 Asp Tyr Arg Glu Val His Tyr Ala Lys Val Val Leu Asp Ala Met Phe
143         115             120                 125
146 Gly Arg Glu Ser Phe Leu Asn Glu Leu Ile Trp Ala Tyr Asp Tyr Gly
147     130             135                 140
150 Ala Arg Ser Lys Ser Lys Trp Pro Thr Lys His Asp Asn Ile Leu Val
151 145             150                 155                 160
154 Tyr Val Lys Asp Pro Asn Asn Tyr Val Trp Asn Gly Gln Asp Val Asp
155             165                 170                 175
158 Arg Glu Pro Tyr Met Ala Pro Gly Leu Val Thr Pro Glu Lys Val Ala
159         180                 185                 190
162 Leu Gly Lys Leu Pro Thr Asp Val Trp Trp His Thr Ile Val Pro Pro
163     195                 200                 205
166 Ala Ser Lys Glu Arg Thr Gly Tyr Ala Thr Gln Lys Pro Val Gly Ile
167     210             215                 220
170 Ile Arg Arg Met Ile Gln Ala Ser Ser Asn Glu Gly Asp Trp Val Leu
171 225             230                 235                 240
174 Asp Phe Phe Ala Gly Ser Gly Thr Thr Gly Ala Ala Ala Arg Gln Leu
175             245                 250                 255
178 Gly Arg Arg Phe Val Leu Val Asp Val Asn Pro Glu Ala Ile Ala Val
179         260                 265                 270
182 Met Ala Lys Arg Leu Asp Asp Gly Ala Leu Asp Thr Ser Val Thr Ile
183     275                 280                 285
186 Val Gln Thr Pro Gln Ser Asp Pro Arg Thr Asp Gly
187     290             295                 300
190 <210> SEQ ID NO: 3
191 <211> LENGTH: 1236
192 <212> TYPE: DNA
193 <213> ORGANISM: Environmental DNA
195 <220> FEATURE:
196 <221> NAME/KEY: CDS
197 <222> LOCATION: (1)..(1233)
198 <223> OTHER INFORMATION:
200 <220> FEATURE:
201 <221> NAME/KEY: misc_feature
202 <222> LOCATION: (198)..(198)
203 <223> OTHER INFORMATION: Xaa = any amino acid
205 <220> FEATURE:
206 <221> NAME/KEY: misc_feature
207 <222> LOCATION: (594)..(594)
208 <223> OTHER INFORMATION: N= G, A, C or T
210 <400> SEQUENCE: 3
211 atg cct aca ctg gat tgg ccc ggt aaa cag tta agc ttc cca cca gct    48
212 Met Pro Thr Leu Asp Trp Pro Gly Lys Gln Leu Ser Phe Pro Pro Ala
213 1               5                   10                  15
215 acc tcc ttg cat ctg gag agt gtg gtc act gag gga gcg gag tca ccg    96
```

See item #10 on Error Summary sheet

The type of errors shown exist throughout the Sequence Listing. Please check subsequent sequences for similar errors.

```
216  Thr Ser Leu His Leu Glu Ser Val Val Thr Glu Gly Ala Glu Ser Pro
217              20                  25                  30
219  cct aat cgt ctg att tgg gcg gac aac ctg ccg cta atg gta gat ttg
220  Pro Asn Arg Leu Ile Trp Ala Asp Asn Leu Pro Leu Met Val Asp Leu   144
221          35                  40                  45
223  ttg gcc gaa tat gaa ggg aaa atc gat ctg atc tac gcc gat ccc cct
224  Leu Ala Glu Tyr Glu Gly Lys Ile Asp Leu Ile Tyr Ala Asp Pro Pro   192
225          50                  55                  60
227  ttt ttt acg gat cgt act tat gcg gcg cga att ggt cat ggg gag gat
228  Phe Phe Thr Asp Arg Thr Tyr Ala Ala Arg Ile Gly His Gly Glu Asp   240
229  65                  70                  75                  80
231  tcg cgt cgt cca caa acc tgg cag ctt gca gaa gga tat acg gac gag
232  Ser Arg Arg Pro Gln Thr Trp Gln Leu Ala Glu Gly Tyr Thr Asp Glu   288
233              85                  90                  95
235  tgg aag gat tta gat gaa tac ctg gac ttc ctt tat cca cgc ctg gta
236  Trp Lys Asp Leu Asp Glu Tyr Leu Asp Phe Leu Tyr Pro Arg Leu Val   336
237              100                 105                 110
239  ctg atg tat cga ctg ctg gca cca cac gga acg ctc tac ttg cac ctg
240  Leu Met Tyr Arg Leu Leu Ala Pro His Gly Thr Leu Tyr Leu His Leu   384
241          115                 120                 125
243  gac tgg cac gcc aat gcc tac gta cgt gta ctg ctt gat gag atc ttc
244  Asp Trp His Ala Asn Ala Tyr Val Arg Val Leu Leu Asp Glu Ile Phe   432
245          130                 135                 140
247  ggg cga cag cgg ttt ctc aac gag atc gtc tgg atc tat cac ggc ccc
248  Gly Arg Gln Arg Phe Leu Asn Glu Ile Val Trp Ile Tyr His Gly Pro   480
249  145                 150                 155                 160
251  tca gcc atc cga cgc gcc ttc aag cgc aaa cat gat acc atc ttg gtt
252  Ser Ala Ile Arg Arg Ala Phe Lys Arg Lys His Asp Thr Ile Leu Val   528
253              165                 170                 175
255  tat gtg aaa ggt gaa aac tat aca ttc aat gcg gat gcg gtt cgt caa
256  Tyr Val Lys Gly Glu Asn Tyr Thr Phe Asn Ala Asp Ala Val Arg Gln   576
257              180                 185                 190
W--> 259  cct tac cat ccg agc acn cat aag acc ttc gct tcc tcc ccg aag gcc
W--> 260  Pro Tyr His Pro Ser Xaa His Lys Thr Phe Ala Ser Ser Pro Lys Ala   624
261              195                 200                 205
263  ggc ttt ggt aag gtg ccg gat ctg cag cgc ggc aaa gtg ccc gaa gac
264  Gly Phe Gly Lys Val Pro Asp Leu Gln Arg Gly Lys Val Pro Glu Asp   672
265          210                 215                 220
267  tgg tgg tat ttt ccg gtc gtg gcc cgt cta cac cga gaa cgg agc ggc
268  Trp Trp Tyr Phe Pro Val Val Ala Arg Leu His Arg Glu Arg Ser Gly   720
269  225                 230                 235                 240
271  tat ccg act caa aag cct caa gcc ttg ctg gag cgg atc ctg ctg gcc
272  Tyr Pro Thr Gln Lys Pro Gln Ala Leu Leu Glu Arg Ile Leu Leu Ala   768
273              245                 250                 255
275  tcc tcg aac gca ggc gat ctg gtg gca gac ttc ttc tgc ggc tca ggg
276  Ser Ser Asn Ala Gly Asp Leu Val Ala Asp Phe Phe Cys Gly Ser Gly   816
277              260                 265                 270
279  aca acc gct gtg gtg gca gcc cgt ctg gga cgg cgc ttc ctg gtc aac
280  Thr Thr Ala Val Val Ala Ala Arg Leu Gly Arg Arg Phe Leu Val Asn   864
```

Input Set : A:\NEB-181.ST25.txt
Output Set: N:\CRF3\05302002\I689343B.raw

```
281           275                 280                   285
283 gat gca agc tgg cgc gcc gtt cat gtg aca cgc aca cgc ttg cta cgc      912
284 Asp Ala Ser Trp Arg Ala Val His Val Thr Arg Thr Arg Leu Leu Arg
285     290                   295               300
287 gag gga gta agt ttc act ttt gaa cgc cag gaa act ttt act cta cct      960
288 Glu Gly Val Ser Phe Thr Phe Glu Arg Gln Glu Thr Phe Thr Leu Pro
289 305               310                   315                   320
291 atc cag cca ctt cca cca gat tgg ttg atc atc gcc gag gag cag att     1008
292 Ile Gln Pro Leu Pro Pro Asp Trp Leu Ile Ile Ala Glu Glu Gln Ile
293                 325               330                   335
295 cgc ctc caa gca ccc ttt ctc gta gat ttt tgg gaa gtg gac gat caa     1056
296 Arg Leu Gln Ala Pro Phe Leu Val Asp Phe Trp Glu Val Asp Asp Gln
297             340               345               350
299 tgg gat ggc aaa atc ttc cgc agc cgt cat caa ggc tta cgc tcc cgc     1104
300 Trp Asp Gly Lys Ile Phe Arg Ser Arg His Gln Gly Leu Arg Ser Arg
301         355               360               365
303 ctt cag gag cag gcg ccg ctc tct cta cca ttg acc ggg aat gga ctg     1152
304 Leu Gln Glu Gln Ala Pro Leu Ser Leu Pro Leu Thr Gly Asn Gly Leu
305     370               375               380
307 ttg tgt gta cgg gta gtg agc cgt gaa ggg gaa tac tat gag ttc aca     1200
308 Leu Cys Val Arg Val Val Ser Arg Glu Gly Glu Tyr Tyr Glu Phe Thr
309 385               390               395               400
311 ggt cga gcc gat agc cct cac ccc gta tcg ttt tga                     1236
312 Gly Arg Ala Asp Ser Pro His Pro Val Ser Phe
313         405               410
```

```
316 <210> SEQ ID NO: 4
317 <211> LENGTH: 411
318 <212> TYPE: PRT
319 <213> ORGANISM: Environmental DNA          — See page 3
321 <220> FEATURE:
322 <221> NAME/KEY: misc_feature
323 <222> LOCATION: (198)..(198)
324 <223> OTHER INFORMATION: Xaa = any amino acid
328 <400> SEQUENCE: 4
330 Met Pro Thr Leu Asp Trp Pro Gly Lys Gln Leu Ser Phe Pro Pro Ala
331 1                 5                   10                  15
334 Thr Ser Leu His Leu Glu Ser Val Val Thr Glu Gly Ala Glu Ser Pro
335             20                  25                  30
338 Pro Asn Arg Leu Ile Trp Ala Asp Asn Leu Pro Leu Met Val Asp Leu
339         35                  40                  45
342 Leu Ala Glu Tyr Glu Gly Lys Ile Asp Leu Ile Tyr Ala Asp Pro Pro
343     50                  55                  60
346 Phe Phe Thr Asp Arg Thr Tyr Ala Ala Arg Ile Gly His Gly Glu Asp
347 65                  70                  75                  80
350 Ser Arg Arg Pro Gln Thr Trp Gln Leu Ala Glu Gly Tyr Thr Asp Glu
351             85                  90                  95
354 Trp Lys Asp Leu Asp Glu Tyr Leu Asp Phe Leu Tyr Pro Arg Leu Val
355             100                 105                 110
358 Leu Met Tyr Arg Leu Leu Ala Pro His Gly Thr Leu Tyr Leu His Leu
```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/689,343B

DATE: 05/30/2002
TIME: 10:22:33

Input Set : A:\NEB-181.ST25.txt
Output Set: N:\CRF3\05302002\I689343B.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 594
Seq#:3; Xaa Pos. 198
Seq#:4; Xaa Pos. 198

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/689,343B

Input Set : A:\NEB-181.ST25.txt
Output Set: N:\CRF3\05302002\I689343B.raw

L:259 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:576
J:260 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:624
I:378 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:192